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ORIGINAL ARTICLES.

A CASE OF PRIMARY UNPIGMENTED SARCOMA OF THE IRIS.

By ADOLF ALT, M.D.

CLINICAL REPORT.

By L. R. CULBERTSON, M.D.,
ZANESVILLE, O.

PRIMARY sarcoma of the iris is rare enough to warrant, or rather still demand, the publication of every case which comes under observation. In the last exhaustive treatise on this subject by C. A. Wood and B. Pusey (Archives of Ophthalmology, 1902, v. XXXI, 4 pp. 323 to 383) the authors state that they have records of 83 cases in which histological examinations were made. To these cases a few new ones have since been added.

The eye containing the tumor which is the subject of the following description, was kindly sent to me by Dr. L. R. Culbertson with the following remarks:

"Mr. D. G., a farmer, 72 years of age, consulted me on June 4, 1903, stating that the vision in his left eye had been failing for some time and that for about one year he had noticed a spot or growth in the iris of this eye. Some twenty years previously this eye had been struck by the limb of a tree, but he had never suffered any inconvenience from this, nor has

he had any pain in the eye at any time. There is no history of a malignant growth in the family.

"*Stat. praes.* Right eye V=$^5/_5$, with + 1 D. Left eye V=$^5/_{12}$, with + 1,75 D. In the left eye a small pinkish growth occupies the upper nasal quadrant of the iris. The pupil dilates regularly, but incompletely, upon the instillation of atropine. Ophthalmoscopic examination disclosed an immature cataract which prevented a minute inspection of the details of the fundus which, however, appeared normal.

"My diagnosis of sarcoma of the iris was concurred in by Dr. C. F. Clark, of Columbus, O., to whom I sent the patient in consultation.

"On June 17th I enucleated the eye. The healing was uneventful and there has been no return of the growth in the orbit (Feb. 1st, 1904.)"

FIG. 1.

When the eyeball reached me it was not in as good a state of preservation as I should have wished it to be, as it had not been put in any conserving fluid. The cornea was partly dried out and had sunken in the center. Its transparency was gone and it was impossible to see the contents of the anterior chamber in consequence. After cutting the eyeball in two, a tumor was seen to occupy the iris on one side altogether, while the diametrically opposite part of the iris seemed normal. Macroscopically no alterations could be found in the other tissues of the eyeball, except some signs

of cataract formation in the cortex of the lens which, however, was in its normal position. Where the thickness of the tumor was greatest it filled apparently the whole of the anterior chamber and touched the cornea.

Microscopical examination. In sections going through the central plane of the tumor, the latter is seen to start at a little distance in front of the root of the iris and to reach to the pupillary edge. (See Fig. 1.) The tumor elements occupy the anterior part of the iris and have left a small part

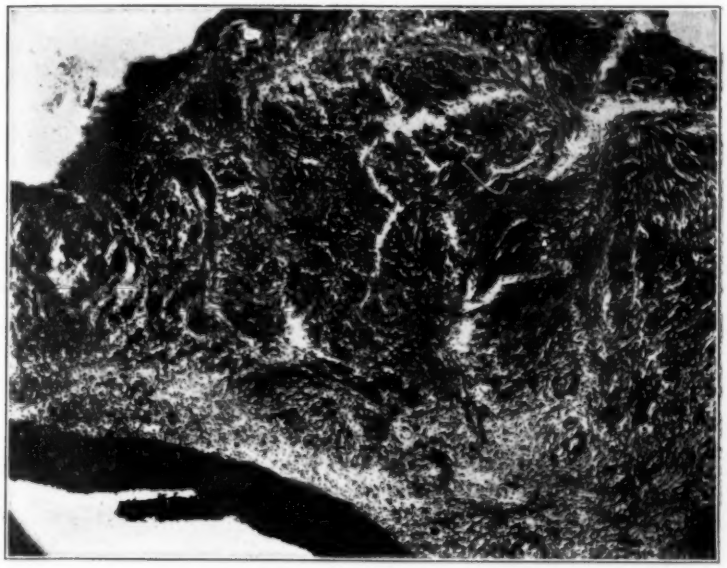

FIG. 2.

of the posterior portion intact. The retinal iris layers are unaffected. (See Fig. 2.) The anterior surface of the tumor is covered by numerous layers of cells which are tightly packed. These cells are perfectly round where they lie isolated, where they are packed together they appear polygonal. They are probably proliferated from the endothelial cells of the anterior iris surface.

The cells of which the tumor proper is composed are spindle and round cells. The spindle cells are of two kinds, some are small and short, others are of considerable length, with a long oval, sometimes rod-like, nucleus. The short

spindle cells are more frequent in what are probably the newer portions of the tumor, while the long ones are more frequent near the surface. (See Fig. 3.) The spindle cells with a rod-like nucleus appear so similar to non-striated muscle fibres, that for a time I thought of a possibility of my having to deal with a leiomyomatous sarcoma. Further study of the tumor, however, proved this idea to be erroneous, since the sphincter fibres, even where the tumor encroaches upon them, can be easily distinguished as such by their shape and reaction to the staining agents. Among these bi-polar spindle

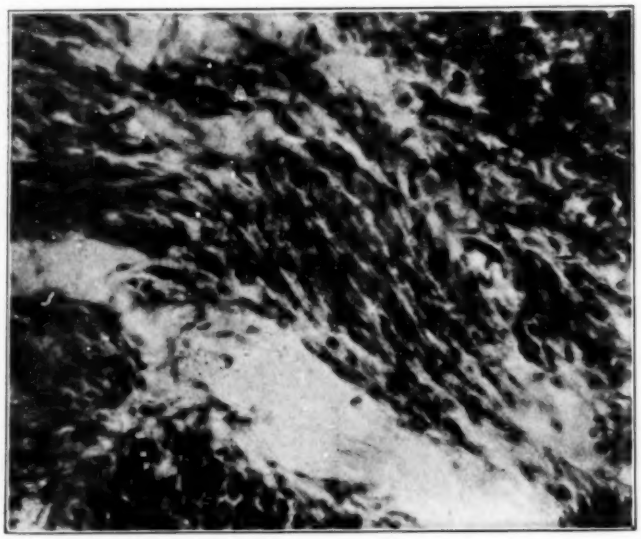

FIG. 3.

cells, which are arranged in bundles and whirls, as is usual in spindle cell sarcomata, lie here and there more slender bi-polar spindle cells, and some with three and four projections, which contain granules of pigment and which are remnants of the iris stroma cells. No intercellular substance can be found. In the portions which were in touch with and probably pressed against the cornea numerous necrotic patches are seen. Such degenerative changes were not found in Woods' and Pusey's cases. (See Fig. 4.)

While the spindle cells form the largest part of the tumor, a comparatively large portion of it consists of round cells.

These, too, are closely packed and no intercellular substance can be made out between them. In studying the tumor, I have gained the impression that, perhaps, the round cells are the original tumor cells and that these gradually have assumed the spindle shape.

The tumor contains, furthermore, microscopical patches of pigment granules, relics of the destroyed stroma cells. Larger accumulations of pigment granules and polygonal pigment cells are found in the iris outside the tumor. The tumor cells proper are free from pigment throughout.

FIG. 4.

Bloodvessels are rather numerous in the periphery of the tumor and contain blood and show no material change in their walls. In the more centrally located parts of the tumor numerous empty capillaries are seen which appear normal. The larger bloodvessels, however, are changed into hyaline bands in which a few nuclei, but no lumen can be found. (See Fig. 5).

Around some of the bloodvessels a small round-cell infiltration reminds one of an inflammatory process. These cells are readily distinguished from the much larger round cells of the tumor. Certain it is, that the bloodvessels have

nothing to do with the origin of this tumor. There is nowhere anything resembling a peri-endothelioma in this case.

While macroscopically this tumor appeared to be as yet confined to its original site in the upper inner quadrant of the iris, microscopical examination shows, that it has spread along the ligamentum pectinatum all around the iris periphery. In all of the meridional sections in the iris angle diametrically opposite to the tumor the root of the iris is attached to the inner surface of the cornea, as we see it in glaucoma. This part of the iris, as well as the anterior part of the ciliary body,

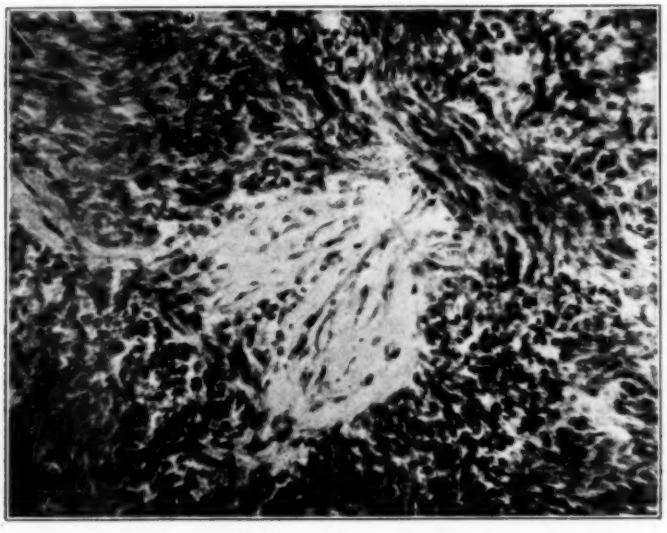

FIG. 5.

is densely infiltrated with the round tumor cells, which are also spreading forward on Descemet's membrane. (See Fig. 6.) One section just happened to pass through a part in which these tumor cells have broken through Descemet's membrane and crept into the sclerocorneal tissue in front of it. (See Fig. 7.) It is somewhat strange that the spreading of the tumor towards the outside of the eye should rather have taken place in this region, than where the original tumor lies. This shows, how little safety is to be placed in removing an apparently localized sarcoma of the iris by iridectomy, as this microscopical perforation could no more have been observed

clinically than the ring-like spreading of the tumor cells along the ligamentum pectinatum.

Aside from this manner of growing of the tumor *per continuitatem*, there are several small isolated metastatic tumors in the iris at some distance from the original tumor. They form small roundish nodules and appear to grow from the surface of the iris into its depth. (See Fig. 8.) The elements which compose them are round cells in every instance, which, again, seems to prove that the round cells are the younger forms, while the spindle cells are the older forms of the cell elements of which this tumor is composed.

FIG. 6.

A peculiar fact is that the iris tissue outside of the tumor shows no cell infiltration and no signs of inflammatory reaction. Yet in every section, the ciliary body is infiltrated with small round cells, not, however, tumor cells.

Aside from the beginning cataract, the remaining structures of the eye show nothing noteworthy.

I do not think any doubt can arise as to the nature of this tumor. It is plainly a sarcoma and an unpipmented one. The small quantity of pigment found in it, has nothing to do with the tumor cells which are throughout free from pigment. In this particular this tumor differs from others in which pigmentation of the spindle cells seemed to point to

the origin of the new formation from the stroma cells of the iris.

While it has been frequently observed that a sarcoma of the iris started from a pigment spot or nævus which had been seen in the iris for years before the development of the tumor, there is no such history in our case, although, it must be confessed that this history is rather incomplete. Yet, it is not to be expected that the patient, a man 72 years of age, should have overlooked the existence of such a nævus. On the other hand, I do not think that the trauma which this eye had

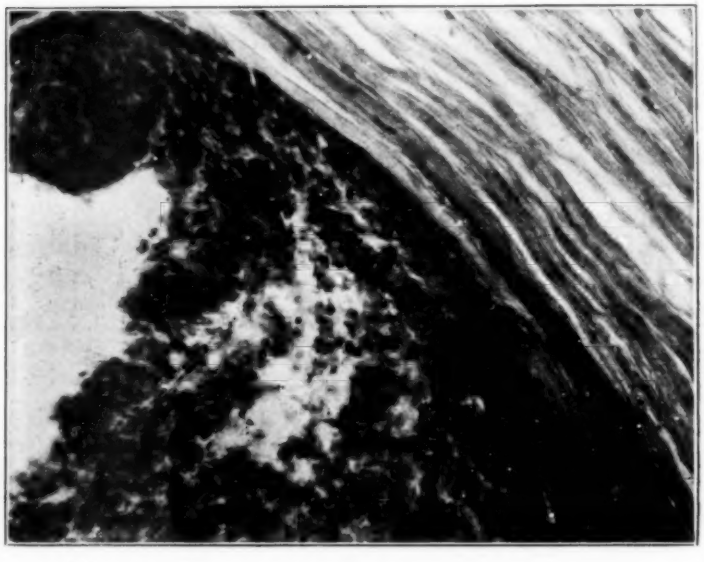

FIG. 7.

undergone about 20 years previous to the development of the tumor can well be held responsible for it. This point, therefore, is not cleared up.

In Wood's and Pusey's monograph two cases of sarcoma of the iris, previously reported by me in this Journal (1887 and 1890), are mentioned as primary sarcomata of the iris, while the second of these cases undoubtedly had originated in the ciliary body and grown into the iris.

In the supplement number of the Klinische Monatsblätter 1903, B. Kayser publishes an account of "a primary sarcoma of the iris which started from a *naevus vasculosus iridis.*"

His description and illustrations tally almost exactly with one of the two cases of vascular nævus of the iris which I have described as a capillary angioma of the iris (this Journal Dec., 1900). In referring to these two cases Kayser implies that they, too, should be considered as sarcomata having sprung from a vascular nævus, and he stated that the long period of years needed by these tumors to reach the development which led to the enucleation of the eyes and the lack of all inflammatory reaction are not necessarily proof of their benignity. Yet, in his case, while there were no inflammatory symptoms, the tumor had not only infiltrated the neighboring tissue, but, also, led to the formation of metastatic nodules in the iris,

FIG. 8.

just as in the case which is the subject of the present paper.

Kayser states, furthermore, that it is Ziegler's opinion that the peculiar canals and cavities in these tumors are probably due to the fact that tumor cells grew into the lumina of the numerous bloodvessels and so divided them into numerous small cavities of which it remains doubtful whether or not they were filled with blood during life. Perhaps, they were filled with aqueous humor.

As there was no tumor infiltration into the neighboring iris and no metastatic nodule formation in my cases, I am still inclined to adhere to the opinion that the two cases, I described as vascular nævi, were really such and not sarcomata of the iris.

SUBCONJUNCTIVAL INJECTIONS OF ALKOHOL.*

BY PROF. D. M. PESCHEL.

FRANKFORT-ON-M.

Translated by Adolf Alt., M. D.

SINCE 1896 I have systematically employed subconjunctival injections of alkohol in suitable cases of acute and chronic inflammatory affections of the eyes, yet, I bring this matter before the ophthalmic public only now after having treated a sufficiently large number of cases to have gained a well-founded judgment as to the value of this method.

The favorable results which had been reached by Ochsner (1895) v. Langsdorff, Salzwedel, and others, by employing alkohol packs in erysipelas, phlegmon, lymphangitis, furuncle and panaritium, encouraged me to make use of the antiphlogistic action of alkohol on the eye, also. For this organ it could not well be done by packs, but easily by means of subconjunctival injections. These have the special advantage that the whole of the injected quantity can act, while with the packs a great deal is lost by evaporation, and the skin does not absorb alkohol easily. A smaller quantity, therefore, when injected must have a much greater effect than a much larger quantity applied externally.

According to numerous recent experiments this effect is above all that of a powerful disinfectant (Epstein, Minervi, Salzwedel, Elsner, etc.) Especially in the moist tissues which are permeated by the injected alkohol, this disinfecting quality of the alkohol is most powerful, while absolute alkohol does not act on dry infectious material, or at least but slightly. The disinfection of the hands with alkohol (Fürbringer) is in general use. Another illustration of the disinfecting quality of alkohol is the well-known fact that (the schyzomycetes in favus, trichophytia and piedra) can be killed by alkoholic vapors, and pure cultures of the specific germs obtained which are not affected by alkohol. The disinfecting quality of alkohol is undoubtedly the reason in part why Unna's alkohol sticks act so well in parasitic skin affections.

Furthermore, alkohol stimulates the tissues (Buckner, Fuchs and Megele)and produces an enlargement of the local

*Klinische Monatsblätter für Augenheilkunde, November—December, 1903.

arteries and increase in arterial pressure, with which are combined a better permeation of blood of the organs, increase in the lymph stream, absorption of pathological exudations and elimination of noxious substances. Moreover, more leukocytes with their products — the bactericidal alexines — are brought to the foci of infection. Although it is known that the alkohols when given internally do not produce a leukocytosis of the blood, this does not stand in the way of their causing an emigration of leukocytes into the tissue when locally applied.

Finally, alkohol has a specific influence on the lymph circulation because it accelerates the endosmtic current of salt in the tissues. When alkohol is added to salt solutions the maximum of acceleration of diffusion is reached if the solution contains 4 per cent. of alkohol, while an addition of 10 per cent. and more, markedly retards diffusion. Alkohol is found in the tissues to be exactly of a percentage which favors diffusion. Gréhan found in dogs, killed by acute alkohol poisoning 0,57 per cent. of alkohol in the blood, between 0,325 and 0,41 per cent. in the tissues.

Subconjunctival injections show the effect of alkohol on the local circulation of blood and lymph in an eminent manner. Alkohol produces a far-reaching flooding of the tissues with lymph, a pretty obstinate but harmless and painless œdema of the conjunctiva bulbi and eyelids, which radiates from the point of injection. This acute lymph-flood may be compared with the one caused by dionin, but is less evanescent and does not get weaker in subsequent injections as with dionin. After the first injection of 15 per cent. alkohol (see later on about dosage) this œdema is generally mild and often permits of a further injection after two days. This then is followed by a more obstinate œdema, so that it is usually best to wait with further injections for 4 or 5 days until the œdema is sufficiently reduced. This œdema is extrabulbar. Neither with the ophthalmoscope nor by direct examination of a rabbit's eye which had been so treated and enucleated, could I find a trace of œdema in the interior of the eye. Nor could I see an œdema of the optic nerve when the dosage of the alkohol was correct. Yet, the powerful influence of this peribulbar lymph flood on the absorption of disease foci within the eye

and optic nerve is not a theoretical assumption, but is at once evident in the cases so treated. I must, however, warn against overdoing with this treatment, especially against a too rapid succession of injections because this might cause an œdema in the depth of the orbit which might even spread into the cranial cavity.

I have been able to prove that the alkohol injected subconjunctivally enters the interior of the eye, in the eye of a 2-year old kitten, into which I had made an injection of 1 gramme of 70 per cent. alkohol. I killed this animal 3 hours after the injection, made exenteration of the globe, and tried to find alkohol qualitatively. The contents of the eye were quickly rubbed with water in a dish, and then distilled. Only the first distillate was collected and again distilled with some potassium carbonicum. The distillate from one eye was treated after Lieben's method with caustic potash and iodine, slightly warmed and allowed to stand over night. A small qnantity of iodoform crystals resulted. Under the microscope they showed as hexagonal plates and stars with 6 radii. The distillate of the second eye, left exposed to the air with a mixture of platinum and asbestos, assumed an acid reaction, and by the addition of a trace of silver oxyde acetate of silver was formed.

Since 1891 I have used in a very extensive practice in numerous cases of keratitis, ulcus, corneæ, iritis, iridochoroiditis, etc., injections of sublimate, oxycyanide of mercury and sodium chloride, and have had good and bad results. In one case of ulcus with a small hypopyon I saw the next day after a subconjunctival injection of sublimate (1 gramm of a 1:5000 solution) the hypopyon markedly increased. Since then I have been rather skeptical concerning the injections of sublimate in acute inflammatory processes. I have never seen such noxious effects from any injections of alkohol.

Rothmund who in 1866 as the first recommended subconjunctival injections of Na Cl, limiting the indication to the stimulation in refractive exudation into the cornea in parenchymatous keratitis, says in parentheses, that alkohol or chloroform, might be used in a similar way. But the promised larger paper, announced in this preliminary notice, has never appeared and it seems, therefore, that he had neither had

very good success with the Na Cl injections which he advised to repeat after two weeks only, nor had he ever used alkohol. There is no mention made in the subsequent ophthalmic literature of subconjunctival injections of alkohol. Therefore, nobody has determined their indications.

The following experiences were made concerning the dosage: Strong parenchymatous injections of alkohol produce quickly and certainly sclerosis of the connective tissue, scar-formation, which peculiarity is made use of in surgery in order to cure hernia (Schwalbe's method), struma, lipoma and varices. That, when long continued and often repeated, even the smallest quantities of alkohol have a similar effect is clear from the fact that chronic alkohol poisoning causes a connective tissue degeneration of different organs. Experiments made on guinea pigs have shown me that a subconjunctival injection of ½ gramm of 50 per cent. alkohol, and more so when 70 per cent. alkohol was used, was followed by œdema, hæmorrhages and emigration of leukocytes in the conjunctiva bulbi and subconjunctivally. After the injection of 70 per cent. alcohol a low-grade leukocytosis could be seen in the spaces of Fontana, the ciliary body, the choroid and the sheaths of the optic nerve when the eyes were fixed 24 hours after the injection. This was easily discernible when the sections were compared with sections from the healthy fellow-eye.

Guided by these experiences, and not forgetting the fact that even 30 per cent. alkohol by its coagulative powèr will fix the cells and nuclei of the tissues, I have thought that 15 per cent. alkohol would be the best correct concentration for therapeutic purposes and have mostly used this in the quantity of 1 ccm. for subconjunctival injection. I have found that in sensitive individuals, especially women, this concentration produced a very severe and persistent œdema, also, nausea, and in these cases I had to use 10 per cent. alkohol. The 15 per cent. alkohol caused in such patients in rare cases photopsiae. On the other hand 10 per cent. alkohol in most cases hardly produces a peribulbar œdema and is therefore not sufficiently energetic in its action to be of therapeutic value. A complication arose when I desired to add 1 mm. cocainum hydrochloricum and cooked the liquid, for sterilization, since the boiling point of 15 per cent. alkohol is not

high enough for this purpose and in the boiling of the liquid some alkohol would evaporate. I, therefore, first cooked a syringe full of a 1 per cent. cocaine solution (1 mmg. of cocaine) and used it at blood heat, and then made the mixture with sterilized absolute alkohol expressly for each injection. It was necessary to use a sterilized dropper of a known size of the drops, in order to get a constant quantity of alkohol. Lately I used one which gave 10 drops of alkohol for 0,24 ccm. and 24 drops of water for for 1,33 c.cm. The mixture of the two equals about 15 1-3 alkohol. The piston of the syringe was made of glass or asbestos, never of oiled leather. Before the injection the conjunctiva was cocainized. The injection was repeated only after the usually mild reaction had passed off, rarely after 1, usually after 2 to 5 or more days. The number of injections varied according to the period of the disease and in some chronic cases (parenchymatous keratitis, disseminate choroiditis) reached 10. The place of injection was changed as much as possible. I never observed subconjunctival scarformation by this method, but I found this to occur in animal's eyes after the injection of 20 and more per cent. of alkohol. It is not very rare that a small subconjunctival hæmorrhage occurs after the injection, which is of course of no importance. The injections may be made under the conjunctiva bulbi or the retrotarsal folds. In the latter case the œd ema of the skin of the lid is greater, in the former case that of the conjunctiva bulbi. When a deep injection is made in the retrotarsal fold the fluid may not spread at all into the ocular conjunctiva, but pass into the anterior orbital tissue. In affections of the anterior part of the eyeball and probably in general this is not the best method and it should always be the aim to have at least a part of the fluid go under the ocular conjunctiva.

I shall now give a short account of the diseases in which I have successfully employed the subconjunctival injection of alkohol. Almost in all of the cases simultaneously other modes of treatment were employed so that not all of the improvements and cures could be attributed to the alkohol injections. Yet, under certain circumstances it was possible to observe their effect, for instance, when, the other treatment being temporarily stopped, an injection of alkohol brought

about the diminution of the inflammatory symptoms or an improvement in function, etc.

Of *keratitis* 5 cases of the acute, circumscribed form partly with ulceration, were treated with 2 to 4 injections. In one case only no direct curative effect could be seen, the other cases healed rapidly. In two of these cases the alkohol injections prevented an ulceration and brought on an absorption of the infiltration. In all cases disinfecting eyewashes were used and sometimes atropine.

In a case of *lime-burn of the cornea* having been treated for 8 days with oxycyanide of mercury and airol insufflations a superficial ulcer of the cornea appeared with severe symptoms of irritation so that with atropine the pupil could be dilated with difficulty and for a short time only. After one alkohol injection the pupil dilated on the following day, and after a second injection 3 days later a rapid healing resulted.

A case of *paracentral staphylococcus ulcer* of the cornea with hypopyon healed, leaving a very small scar, with three injections, besides an oxycyanide of mercury wash. Five cases of trachomatous keratitis, two with ulcers, were brought to a quick and much more favorable termination, than is usual in trachoma, by 4 to 5 alkohol injections combined with other therapeutic measures. The lid affection and the pannus did not appear to be influenced thereby. Three cases of parenchymatous keratitis due to congenital lues were treated with a mild course of mercury and the usual topical applications, but were undoubtedly brought either to a quicker healing than usual, or with less of a scar and ulceration of the cornea with 6, 7 and 10 alkohol injections. In a fourth typical case of parenchymatous keratitis I did not employ the alkohol injections until the typical inflammatory symptoms were gone and the stage was reached in which a diffuse vascularized opacity with a denser center covered both corneae. This stage had been reached in about three months in the right and in three and a half in the left eye under the application of yellow oxide of mercury ointment. I then made 10 subconjunctival alkohol injections in the left eye only in the course of 50 days and not only saw the opacity clear up quicker than in the right eye, but, also, with a better final

result, so that while after two months vision for distance, was not much better than in the right eye (10/100 resp. 10/200), the left eye could read Snellen 0,8 easily with + 3 D., while the right eye barely read 1,1. This case convinced me that the injections accelerated the absorption of the exudations and prevented their permanent organization.

I will add here at once that in four cases of large recent *corneal opacities* which remained after keratitis circumscripta and corneal ulceration, by means of 6 to 8 alkohol injections added to the application of yellow ointment, I have produced a rapid and highly satisfactory clèaring up. In one case (in a young man) of very obstinate vascular keratitis with infiltrations in which different of the usual local medicamentations besides constitutional treatment had been made use of, a decided improvement was reached only by 4 alkohol injections, and by 3 further injections in the course of 3 months the pannus scrophulosus was greatly reduced. In similar cases in children I have never made injections, since they would necessitate a general narcosis.

In 3 cases of *ulcus serpens* with hypopyon, one of which was complicated with dakryocystoblennorrhœa, I found from 3 to 5 injections very effective. Of course, other modes of treatment were simultaneously applied in these cases, as antisepsis, moist heat, treatment of the disease of the lacrimal sac, etc., yet, I could see with certainty that, when a slow progress of the disease was going on, the injections stopped this. In one case, however, in which while the infected progressing edge of the ulcer had assumed a much better appearance, there yet remained a possibility of further progress, I touched this with the sovereign Paquelin, whereupon healing took place at once.

A case of true *corneal abscess* in an eye with an anterior synechia was brought to a favorable end by 6 alkohol injections. The little abscess was formed near the site of the synechia in the posterior layers of the otherwise clear cornea due to infectious germs which had remained behind after former iritic attacks, had in three weeks spread through the anterior lamellæ to the surface and healed after this perforation. The symptoms of irritation were quite severe and the alkohol injections reduced these and prevented further spread-

ing. Of course, other medicamentation, as atropine, moist heat, etc., was added.

Two cases of *rheumatic episcleritis*, one of which had lasted for more than 6 months, were very favorably influenced by the alkohol injections. In the recent case 4 injections, in the chronic one 8 injections, with other treatment, sufficed to perfect a cure.

Six cases of acute and subacute *iritis*, several of rheumatic, one of syphilitic, and one of gonorrhoic origin, reacted on 4 to 7 alkohol injections by a reduction of the inflammatory symptoms and absorption of exudates. This was plainly visible, although other treatment was employed. In one case of very tedious iritis serosa, which in spite of very energetic treatment had already lasted 9 months, I produced in one month by 5 alkohol injections a great reduction in the symptoms and absorption of most of the deposits on Descemet's membrane, so that the effect of this therapeusis was very evident.

A *hyphaema* after trauma in a man 60 years old, which did not yield to pressure bandage and atropine, was promptly absorbed after 2 alkohol injections.

A case of subacute *tenonitis* with œdema of the conjunctiva and exophthalmus, in which a physician had diagnosed a rapidly growing orbital tumor, was rapidly improved, and cured in a few weeks by 3 alkohol injections and moist heat.

Traumatic *iridocyclitis* from a deep burn with melted lead of the sclerotic in the region of the root of the iris, another case due to contusion of the eyeball, further on a case of iridocyclitic irritation with ciliary neurosis following the extraction of a soft choroiditic cataract, were treated with alkohol, besides atropine and other local applications; 3 to 5 injections with intervals of 2 to 6 days had an undoubted beneficial influence on the course of the disease.

Cyclitis in an atrophic eye which ran a slow course with exacerbations, by means of 8 alkohol injections, was improved to such a degree that an artificial eye could be worn on the stump; 6 months later, however, when the irritation recurred, I preferred to enucleate the stump.

In a case of *perforating trauma* of the sclera just behind the ciliary body with profuse hæmorrhages into the vitreous

body, caused by a puncture with a pocket-knife, an infectious choroiditis resulted, which, beginning from the 5th day after the injury, was treated with 9 alkohol injections at intervals of 1 to 6 days. I am convinced that thereby I did not only prevent a panophthalmitis, but saved even perception of light and projection.

In four cases of spontaneous or traumatic *hæmorrhages in vitreo*, I could observe the beneficial action of the injection on the absorption. Smaller and larger hæmorrhages were cleared up in a much shorter time than they do when left alone. In one case a glaucoma with hæmorrhagic tendencies had been operated on. A hyphaema and a slight vitreous hæmorrhage were absorbed the first in two weeks, the latter a little slower, and the beneficial action of alkohol injections in those 4 cases was undoubted.

Exudative opacities in the vitreous body, too, are favorably influenced, as I saw in the following case: A lady, 40 years old, had had for years in both eyes a chronic iridochoroiditis with posterior synechiae and diffuse opacities in the vitreous body, which often remained unaltered for months. During these years I treated the patient by all sorts of means, hydrotherapeutic applications, sweat cures, pilocarpine injections, mild mercurials, different iodide preparations, stimulating cures, etc., and succeeded in preserving a good visual acuity in both eyes, sufficient for reading print. At one time, when the condition had remained stationary in both eyes for a continued period, I made in the left eye 6 alkohol injections during one month, and found that during this time in this eye subjectively and objectively a marked clearing of the opacities and improvement of the visual acuity resulted, while no change occurred in the right eye.

A case of *preretinal* hæmorrhage is especially noteworthy. A middle-aged man while reconvalescing from a febrile disease suddenly noticed a central scotoma before his right eye. The ophthalmoscope revealed in the region of the macula lutea a hæmorrhage of the size of 6 papillæ which had upwards an irregular outline and was surrounded by smaller hæmorrhages, while below it had a sharp horizontal limitation (inverted image.) By temporary pressure bandage and 6 alkohol injections made in about 5 weeks the largest part of this hæmor-

rhage was absorbed. During this time the horizontal line rose higher and higher, showing that this was a fluid preretinal hæmorrhage.

In a man 62 years old with compensated valvular insufficiency of the aorta, by means of iodide of potassium and 7 alkohol injections, in 2 months, a *hæmorrhagic choroiditis* was improved to such a degree that vision rose from counting of fingers to 15/70. Some 10 months later the tension in this age increased so as to necessitate an iridectomy.

Two cases of *central choroiditis* were treated with alkohol. One in a man of middle age who suffered from muscular rheumatism and mild rheumatic choroiditis. This showed itself in the left eye only through small scotomata near the macula lutea, although nothing was visible ophthalmoscopically; 5 alkohol injections, with salicylates internally, brought about the disappearance of the scotomata. A lady 60 years old, with arteriosclerosis suffered from a mild choroiditis centralis without ophthalmoscopic signs and complained especially of metamorphopsia without scotomata. Mild iodide treatment and 4 alkohol injections in the course of one month caused a very marked improvement in the metamorphopsia.

In 2 cases of *disseminate choroiditis* without known basis the disease was cut short in 3 and 5 months by means of 9 and 10 alkohol injections combined with unimportant other treatment.

I found that alkohol injections are a very important adjunct to the mercurial treatment in *sympathetic ophthalmia*, as well when used as a preventative or as a treatment of the established disease. This effect was plainly noted in the left eye of a young laborer who unfortunately gave his consent to the enucleation of the right injured eye only when the sympathetic ophthalmia broke out in the left one. This with synicesis of the iris and opacities of the vitreous body, had depressed vision to such an extent that the patient could hardly count fingers. With mercurial inunctions and other treatment a slow improvement was gained so that he could count fingers at 6 feet after 6 months. Then 17 alkohol injections in 2 months produced a further improvement sc that he counted fingers at 10 to 12 feet.

Against the chorioretinal complications in *myopia* I have

made in 3 cases 5 or 6 alkohol injections with marked success and have seen that the irritative symptoms and photopsiæ were improved, the opacities in the vitreous body were cleared up, retinal hæmorrhages were absorbed, and the loss of vision was prevented.

Detachment of the retina I treated with alkohol injections in 2 cases. In the first case a traumatic hæmorrhagic detachment had occurred in the external lower quadrant of the right eye after a contusion. Pressure bandage, rest, and 5 alkohol injections brought about absorption and restitution of the visual field in the affected quadrant. In the second case a recent detachment of the upper part of the retina in a case of myopia of high degree all treatment, including alkohol injections, remained useless.

In a case of *pigmentary retinitis* in a man 30 years of age, in which during the previous 3 years vision had markedly deteriorated, and the visual field had progressively become smaller, luckily 6 alkohol injections with stimulating treatment, and a few hydrotherapeutic applications produced a standstill in the progress of the disease in the course of several months, without any alteration in the characteristic ophthalmoscopic appearances. A year later both visual acuity and visual field were found to be the same.

Finally, I treated a case of acute *retrobulbar neuritis*, which had to be looked upon as of rheumatic origin. A lady, 36 years old, had become absolutely amaurotic with severe pain in the left eye in the course of two days. Rest, an icebag to the head, catharsis and a few leeches restored within 2 weeks a limited visual acuity (fingers counted excentrically at 5 feet, with central scotoma); 5 alcohol injections, now made, increased vision in a month to counting of fingers at 10 feet. This vision remained stationary with an irregularly contracted visual field and a central scotoma. The ophthalmoscope showed progressive atrophy of the optic nerve.

EDITORIAL NOTES.

The following remarks of several contemporaries on the demand of certain opticians for recognition as hybrid physicians, have our hearty approval. The question is again agitating the State of New York and Great Britain. We hope that in the interest of the opticians themselves no such demand will be granted.

Act to Define and Regulate the Practice of Optometry.

It is sometimes supposed that opticians have contributed to the knowledge of the world very materially in the invention of glasses in their adjustment, and so forth. As a matter of fact, the world remained without any scientific adjustment of glasses to the eye, without any exact knowledge as to their powers, until Professor Donders, of Utrecht, in Holland, a member of the medical profession, a physiologist and ophthalmologist, deduced this from a mass of information that had been gathered, not by opticians, but by members of the medical profession and other scientists including himself, and classified it so that glasses could do their important work. From that day to this the advances continue to be made by men who are educated and licensed to practice medicine The adjustment of glasses is just as much a matter of medical practice, as the prescription for a brace for any crippled part of the body, or, as the prescription of a drug to relieve a pain. All these things require knowledge of the anatomy of the human body, a general understanding of the relations of health and disease to the functions of the body, and so forth.

Now, what are our opticians? They are men who grind glasses according to the rules laid down, not by themselves, but by the scientific teachers of the world. They sell these glasses to people who may ask for them, either on the prescription of a physician or on their own choice. The medical profession has no desire to interfere with the liberty of any person who chooses to select his own glasses from those offered to him by an optician, neither do we object to any patient going to an apothecary and asking for a non-poison-

ous drug for the relief of some ache or pain from which he is suffering. The responsibility in such cases is with himself, and not with the optician or the druggist, but what we do object to in behalf of the public, is that either one of these people shall undertake to prescribe for the patient, tell him what glasses will relieve his headache, what glasses will correct the strain on his vision, or what drug will cure his ailments. Then he has engaged in the practice of medicine, which the State of New York does not allow, unless after certain examination.

But the opticians will appear this year again with "Act to Define and Regulate the Practice of Optometry." Optometry the bill says, "is hereby defined as the employment of subjective and objective mechanical means to determine the accommodative and refractive states of the eye by using such skilled mechanical means as will determine their choice." This definition has a fatal defect in assuming that the human body is entirely a mechanical organism, whose defects can be attended to just as can those of a steam engine or an electric dynamo. (*The Post-Graduate.*)

The Opticians' "Optometry" Should be made Illegal Instead of Being Legalized.

The "Optical Society of the State of New York" has prepared a bill which it is seeking to have made law and it is actually asking physicians for their help in securing its passage. The first section of this bill is a definition of "optometry," which reads as follows:

The employment of any means, other than the use of drugs, for the measurement of the powers of vision, and the adaptation of lenses for the aid thereof.

Section 9 of this proposed bill makes a distinction between optometrists and "those who sell spectacles or eyeglasses on prescription from any duly qualified optometrist or physician," from which we learn much! In the letter seeking the aid of physicians there are these paragraphs:

As the measure does not invade the domain of medicine, we desire the support of all medical practitioners, believing that the compulsory education of those engaged in fitting spectacles and eyeglasses will prove a pronounced public service. . . . We want all who practise optometry to be able to recog-

nize desease for the SOLE purpose of urging the importance of consulting qualified physicians.

This is the rankest hypocrisy and deceit. "Optometry" practised by any but physicians should be made illegal instead of cunningly legalized. No "optometrist" can possibly "recognize disease" except after a medical education. It is as important that the treatment of diseases of the eye should be solely in the hands of medical men as that druggists should be disqualified from prescribing for other diseases. Moreover there is a double deceit in all this, for almost no spectacles or eyeglasses are prescribed by the medical man for the sole purpose of "aiding vision." Myopia is a disease itself, and astigmatism and farsightedness, if not always of themselves diseases, do produce many and profound diseases, directly and inevitably. There are no instruments of the materia medica more powerful for good or evil than lenses used in spectacles. The eye is the most valuable of the sense organs of the body; and its diseases and the function of vision are indissolubly bound together. The disorders of vision cannot be treated apart from the diseases of the eye, and also from the diseases of the brain and of the whole body which result from optometry good or bad, or from the want of it. Every physician should labor to make optometry illegal by any other than the physician. (*Am. Medicine,*)

THE OPTICAL SOCIETY'S BILL.

The attempt on the part of the Optical Society of the State of New York to secure legislation to legalize the acts of its members in practising medicine without the now legal qualifications is to be renewed. Its failures in former years were to be attributed in no small degree to the efforts of the State Medical Society and its committee on legislation. This year the president of the Optical Society has sent to each physician in the State a copy of the proposed act, a circular in which certain erroneous statements are made, and a postal card which it is requested that the physician sign and return. Doubtless many of these postal cards have been signed and returned by physicians who have forgotten for the time the struggles so ably waged at Albany, by our committee on legislation to maintain the standard to be required of all who shall practise any branch of medicine in this State, but who would

not willingly or knowingly hamper the action of that committee. But when our committee presents the almost unanimous opposition of the profession to this or any other bill which will tend to "let down the bars," it will be confronted by this mass of postal cards from the individual members of the profession it represents, each one of whom has signed a statement directly antagonistic to its efforts. In his circular letter the president of the Optical Society says, "As the measure does not invade the domain of medicine we desire the support of all medical practitioners. . . . We want all who practice Optometry to be able to recognize disease for the SOLE purpose of urging the importance of consulting qualified physicians." Section I. of the bill is "The practice of Optometry is defined to be the employment of any means, other than the use of drugs, for the measurement of the powers of vision and the adaptation of lenses for the aid thereof." By the "powers of vision" must be meant the functional activity of the retina as influenced by disease or malformation of some portion of the eye. The adaptation of lenses for the aid thereof can take place with benefit to the patient only when malformation is the fault, but the treatment of diseases and malformations of the eye is as much practice of medicine as treatment of the diseases and malformation of the limbs or of the internal organs, and all who practice this branch of medicine should be equally well qualified with those who devote their attention to the others. The statement of the president in his letter, that the measure does not invade the domain of medicine, is not true. If it were not for the desire to invade that domain such a bill as this would never be thought of, much less pressed year after year upon the legislature. Persons who suffer from troubles which call for attention to the eyes should be encouraged by the profession to avoid such people as those it is now proposed to license, and to consult physicians who are specialists in eye diseases, to determine what treatment should be instituted. Meantime, no effort should be spared to exclude this insidious measure. It is, in sooth, the wooden horse of Troy. Surely of it and its specious sops to the medical profession, we may well repeat "*Timeo Danaos et dona ferentes.*" (*New York and Philadelphia Medical Journal.*)

The following appears in the February number of our most recent ophthalmic contemporary, the *Ophthalmoscope:*

THE OPTICIAN QUESTION.

We congratulate Mr. W. A. Dixey, of New Broad Street, a member of the well-known firm of London opticians, on having the courage of his opinions on the vexed question of sight testing by a member of his craft. He has issued a circular letter to the leading journals of the optical trade. As an old-standing member of the Company he discusses the proposal to add the subject of sight testing to the examinations for opticians held by the Spectacle Makers' Company. He smites the whole army of pseudo-oculists hip and thigh in a letter which is admirably concise, moderate, and convincing. We have not space here to discuss the communication at length, but must refer readers interested in the matter to the original document. Take the following passage: "Three processes are involved in fitting a person with spectacles: (1) Testing the sight; (2) Measuring the face; (3) Selling the spectacles. There is also the process of making the spectacles, but I leave that out for the present. As a matter of convenience, I contend that the first belongs to the consulting room, and the third to the shop. The second can in this respect be equally well conducted in either." That is a crisp enough statement, and Mr. Dixey's style is equally to the point when he comes to deal with the actual manufacture. "On the wholesale and manufacturing side of the trade," he says, "there has been a lack of technical knowledge and a want of enterprise, which have had the natural result that we are inundated with a quantity of foreign goods, which could just as well—nay, better—have been made in England." Bravo! Mr. Dixey, the wholesome English breed of opticians yet lives and breathes among us. Heaven only knows why on earth a self-respecting mechanic and tradesman should want a number of letters after his name and a shop-window decoration of diploma, anatomical models, and optical apparatus, instead of the articles it is his trade to make and sell. Perhaps were Thackeray alive he might solve the problem in an additional chapter to his "BOOK OF SNOBS."

ABSTRACTS FROM MEDICAL LITERATURE.

By W. A. SHOEMAKER, M.D.
ST. LOUIS, MO.

THE TREATMENT OF LACRIMAL STRICTURE.

J. Wilkinson Jewey (in a paper read before the Tri-State Medical Society of Georgia, Alabama and Tennessee, October 13–15, 1903, *Medical Record*, Dec. 19, 1903), discusses the methods of treating this disease, referring especially to the passing of large probes (as high as No. 16, as recommended by Theobald,) a method that, in his experience has left much to be desired. The principal objections to this method are: (1) It is necessary to split the canaliculus for its entire length; (2) the entrance of the canaliculus into the sac is tremendously dilated. The author illustrates and describes an instrument that he thinks overcomes these objections, at least in part, and possesses other advantages. He says:

The principle of the instrument is simply that of a wire bent double upon itself. When traction is exerted upon one free end, the other being held firm, a buckling results. This buckling accomplishes the dilation. The instrument can be introduced as easily as a No. 1 or No. 2 lacrimal probe, and when *in situ* can be dilated to any desired extent, thus avoiding the trauma and irritation necessarily involved in forcing a large solid dilator into the passage. The greatest pressure of dilatation occurs at the point of the greatest resistance in the canal, which, of course is the location of the stricture. While the instrument is in place and the wires are separated, the passage is open for syringing, or even for applications by means of a cotton-tipped probe. This is possible with no other form of dilator hitherto devised. By this means, with every fold and crevice of the mucous lining on the stretch, the entire surface is accessible to flushing and medication.

With this instrument it is often feasible to dilate lacrimal strictures to any desired extent without splitting the canaliculus. In this way the surgeon can avoid many of those unfortunate cases in which even after the stricture has been re-

lieved by the old method, epiphora persists on account of the lost power of capillary attraction and suction due to splitting of the canaliculus. Were this last the only advantage the dilator possessed it would still be of inestimable value to the ophthalmologist.

The instrument is provided with a sliding collar which can be pushed down to the punctum lacrimale in those cases in which splitting is unnecessary, so preventing the possibility of rupturing the punctum or canaliculus in the process of dilating the remainder of the canal. The wire part of the dilator is slightly malleable and can be bent to any desired curve.

In using the dilator I practice the following technique: After instilling adrenalin and cocaine into the eye, the attempt is made to pass through the lower canaliculus a No. 1 or No. 2 Bowman's silver probe. If this cannot be done after repeated trials, the punctum is incised for about 2 mm., and another effort is made to pass the small probe. If this be still impossible then the canaliculus must be split in the usual way. With a small syringe and silver canula adrenalin, cocaine, and boric acid, in separate or mixed solution are injected into the sac and as far down the canal as possible.

After a wait of five minutes for these agents to take effect, the dilator with a little simple aseptic or antiseptic lubrication, such as carbolated or borated vaselin, is passed through the canal, the way having first been gently explored by the small Bowman probe. The dilator being held by the ring and barrel with the left hand, the right hand turns the thumbscrew to spring the wires apart. The amount of dilatation can easily be guaged while the instrument is in position by means of a scale on the barrel.

The dilatation should be effected slowly, and a little at a time, with waiting intervals between the turns; when it is done slowly and gently little pain is caused. Having been sprung to the desired extent (the amount of spreading being increased a little at each successive sitting, these being about forty-eight hours apart), the instrument should be allowed to remain in the passage for ten or fifteen minutes. Then the thumbscrew is rapidly reversed, the instrument is withdrawn, and the passage is syringed with some suitable antiseptic solution. In the intervals between sittings, tbe patient is given the usual antiseptic wash for the eye.

A CONTRIBUTION TO THE STUDY OF VISUAL DISTURBANCES IN BRAIN INJURY.

William E. Gamble (*Jour. A. M. A.*, Jan. 23,) had a case of brain injury under observation during a period of four years and suggests the following conclusions:

1. A cortical lesion the size of a 32-caliber (!) bullet, involving the greater part (posterior) of the third and fourth left temporal convolutions and bruising of extreme anterior end of inferior occipital convolution, and a subcortical lesion penetrating the middle occipital convolution at the same level, produces verbal amnesia, especially for names of objects seen and having been seen, particularly those which have proper names (concrete nouns), and for names of colors, especially names of special shades, such as bismarck-brown, etc., (amnesic color blindness) and pure word-blindness (alexia), which may be in part a form of visual verbal amnesia.

2. Verbal amnesia is a result of a lesion in the cortex of the third and fourth temporal convolutions, left hemisphere and injury to cortex of anterior end of inferior occipital convolution.

3. The amnesic color blindness and alexia result from subcortical lesion in left middle occipital convolution.

4. The reacquirement of these functions in a man 28 years of age is a slow and tedious process of education of the specialized though undeveloped cells of the right hemisphere, requiring years for even partial accomplishment.

5. Injury to the optic radiations of Gratiolet may produce negative scotoma, contrary to the teaching that such a lesion produces positive scotoma.

6. Primary atrophy of the optic discs occurs in lesions of the left tempero-occipital region.

STEREOSCOPIC EXERCISES.—WITH A SERIES OF PICTURES TO BE USED IN AMBLYOPIA AND SQUINT.

Albert B. Hale (*Jour. A. M. A.*, Oct. 10th, 1903), feeling that the stereoscopic views now in use are for the most part too complicated for successful use by the patient at home, has published a series of American pictures, simplifying them as much as possible. He says:

"Stereoscopic exercises must illustrate five stages.

"1. Simple tests to measure what the one eye or both

eyes together can do. This I have embodied in Series A (1, 2, 3, etc.), which can be extended as far as may be desired.

"2. Simple tests of the ability of each eye to see its own field and to retain this impression while the other eye also sees. This is Series B, which grows somewhat more difficult from number to number.

"3. Tests in which each eye sees what it at first takes to be the same picture, but in which the half for each eye lacks some detail present in the half for the other eye; these halves are probably fused, or the patient thinks they are, but a failure to fuse can be detected by the omission from the patient's description of one or more details. This is Series C.

"4. Tests in which not only is there an instinctive stimulus to fusion, but also the added factor of depth, for the figures are so arranged that each eye obtains a picture presented to it at an angle differing fron the angle of the other eye, and the completed picture seen with both eyes acting together should be that of a solid body, i. e., there should be a perception of depth in addition to fusion; stereoscopy, the perfected act of binocular single vision. This is Series D.

"5. Tests by means of pictures of what we habitually see in the outer world, in which I have introduced two ordinary photographs from life and a simple catch card for reading, in which each eye is deprived of some letters visible to the other eye, so that both eyes must be used together and simultaneously before the story can be fluently read. This is Series E.

"These charts may be placed in the hands of any child or adult, to be used at home and frequently, with regular reports to the ophthalmologist of what progress has been made. The pictures are scientific, clear, readily understood, handy and cheap. Any simple stereoscope of the shops may be used. The whole value of stereoscopic exercise depends on repetition, as it is only by this continuously repeated stimulation that the habit of fusion may be formed and perpetuated."

THE TREATMENT OF DACRYOCYSTITIS BY EXTIRPATION OF THE LACRIMAL SAC.

Etienne Rollet (*The Ophthalmoscope*, Dec. 1903), advises the removal of the sac: (1) In simple dacryocystitis, when it is old and rebellious, when the introduction of probes is

very painful or impossible, and when a speedy cure must be effected. (2) In cases of lacrimal tumor with mucous or purulent contents. (3) Chronic lacrimal fistulae. (4) Tuberculous dacryocystitis. In phlegmonous dacryocystitis the operation is least indicated, and advisable only after the inflammation has subsided.

The author has removed fifty sacs. Twenty-seven cases were watched for periods ranging from six months to seven years. Eighty-nine per cent. were cured. In 67 per cent. lacrimation did not exist; in 22 per cent. it was present only when the patient was exposed to the wind or cold; in eleven per cent it persisted.

Three theories have been advanced to account for the good results in this class of cases:

"(1) That the lacrimo-nasal canal becomes formed anew, a view that I have opposed on both clinical and experimental grounds;

"(2) That the watering of the eye disappears with the cause of the hypersecretion, namely, the lacrimal inflammation. This theory explains the disappearance of the lacrimation often witnessed immediately after the removal of the sac, or, in other words, after suppression of the suppuration causing the lacrimal irritation;

"(3) That the operation is followed by an atrophy of the lacrimal gland. This theory explains those cases where the watering of the eye persists for some little time after ablation of the sac. An experiment performed by me in 1896 upon a dog, showed that an atrophy, macroscopical and microscopical, of the lacrimal glands followed five months after extirpation of the animal's lacrimal sac. Tscherno-Schwartz in 1901, reached the same results after experiments upon rabbits."

PAMPHLETS RECEIVED.

"Suggestions for a Uniform Nomenclature of the Movements and Motor Anomalies of the Eye." By A. Duane, M. D.

"Aplasia of the Papillæ and Retinal Vessels, with a Peculiar Anomaly at the Mascula in Eyes Otherwise Normal." By A. Duane, M. D.

BOOK REVIEWS.

DIE AUGENAERZTLICHEN OPERATIONEN (OPERATIONS ON THE EYE). By PROF. DR. H. CZERMAK. Part XV. Wien, 1904. CARL GEROLD'S SOHN. Price 2 marks.

This is the continuation of the chapter on operations on the lens noticed in our last issue. Our high opinion of this work remains unchanged.

DISEASES OF THE EYE. By L. WEBSTER FOX, A.M., M.D. 5 Colored Plates and 290 Illustrations. [New York and London, 1904: D. Appleton & Co.]

This is a thoroughly practical treatise on diseases of the eye which is not only complete, but bears the mark of a teacher on every page. Especial attention is naturally paid to the several points with which the author's name is more prominently connected. The illustrations are mostly good; the print is large.

BIOGRAPHICAL CLINICS. VOLUME II. THE ORIGIN OF THE ILL HEALTH OF GEORGE ELIOT, GEORGE HENRY LEWES, WAGNER, PARKMAN, JANE WELCH CARLYLE, SPENCER, WHITTIER, MARGARET FULLER OSSOLI, AND NIETZSCHE. By GEORGE M. GOULD, M. D. [Philadelphia: 1904. P. Blakiston's Son & Co.]

The continuations of the author's studies concerning the ocular defects and their influences on the life and character of individuals of literary prominence are introduced by a severe lecture to the critics of the first volume. The author is so firmly convinced of his deductions, that he cannot accept any other views than his own. A special chapter contains "68 reasons why glasses did not give relief," which while it has been previously published, is well worthy of studying again and and again, as it contains numerous points of great importance.

The book is full of interesting and profitable reading, although in our opinion the author in arguing his point goes decidedly too far, and must be taken *cum grano salis*.

ALT.

PAMPHLETS.

"Correct Breathing." By J. M. Brown, M. D.

"Lacunar Tonsillitis." By J. M. Brown, M. D.

"A Simple Test for Stereoscopic Vision." By F. H. Verhoeff.

"Stenosis of the Lacrimonasal Duct." By J. C. Buckwalter, M. D.

"Medical and Surgical Report of St. Luke's Hospital, 1903." Chicago.

"The Systematic Use of Cylinders in Making the Shadow Test." By A. Duane, M. D.

"The Various Methods of Mounting Gross Eye Preparations." By C. A. Wood, M. D.

"Vésicule Flottante du Vitré (Vesicle Floating in the Vitreous Body)." By Dr. Uribe Troncoso.

"A Hitherto Undescribed Membrane of the Eye and Its Significance." By F. H. Verhoeff, M. D.

"The Value of the Screen-Test as a Precise Means of Measuring Squint." By A. Duane, M. D.

"Eine Graduelle Plastische Tenotomy, (a Graduated Plastic Tenotomy)." By F. H. Verhoeff, M. D.

"The Window-Resection Operation for Correction of Deflections of the Nasal Septum." By O. T. Freer, M. D.

"Congenital Orbital Sarcoma of Endothelial Origin in an Infant. Operation and Preservation of Globe." By Th. Frank, M. D.

"Ocular Examination as an Aid to the Early Diagnosis of Multiple Sclerosis, with Report of a Case." By John Green Jr., M. D., and S. I. Schwab, M. D.

"Some Remarks on the Use of Mallory's Phosphotungstic Acid Hæmatoxyline, and a Note on the Musculus Papillæ Optici of Nicolai." By F. H. Verhoeff, M. D.

"La Composition de l' Humeur Aqueuse dans les cas de Cataracte Sénile (the Composition of the Aqueous Humor in Cases of Senile Cataract)." By Dr. Uribe Troncoso.